Alert Notice

Alert Notice #: ALN-89-01 **File Code:** ALN

Date: 03/08/89
CFR Reference(s):
Keyword(s): ERW

Subject:
UPDATE (01/28/88): Additional findings relative to factors contributing to operational failures of pipelines constructed by ERW prior to 1970.

US Department of Transportation
Research and Special Programs Administration

400 Seventh Street, SW.
Washington, DC 20590

PIPELINE SAFETY ALERT NOTICE

Alert Notice: ALN-89-01 **Date: 03/08/89**

To: All Natural Gas Transmission Operators & All Hazardous Liquid Pipeline Operators

Subject:

Purpose:
The purpose of this letter is to advise you of additional findings since the January 2, 1922, "ALERT NOTICE" relative to factors contributing to operational failures of pipelines constructed with ERW pipe manufactured prior to 1970. If you have such pipe in your pipeline system, OPS recommends that you read the enclosed copy of the latest "ALERT NOTICE" and take appropriate preventive steps.

Richard L. Beam, Director, Office of Pipeline Safety

Notice:

Background:
On January 28, 1988, OPS issued an Alert Notice advising pipeline operators who have pipe manufactured by ERW process of the occurrence of 12 hazardous liquid pipeline failures and of actions which operators may take to reduce the risks of similar failures.

The continuing failure of ERW seams remains a matter of concern to RSPA. Since the issuance of that Alert Notice, RSPA has data on 8 additional hazardous liquid pipeline failures and 1 on a gas transmission pipeline involving pie seams manufactured prior to 1970 by the ERW process. Of the 8 additional hazardous liquid pipeline failures, 2 appear to be due to selective corrosion of the ERW seam. As stated in the 1988 Alert Notice (ALN-88-01), seams with selective corrosion occurring in an area of manufacturing defects may be particularly vulnerable to failure. However, the other failures appear to have resulted from flat growth of manufacturing defects in the ERW seam.

Two of these failures resulted in some of the most significant spills (more than 20,000 bbls.) in recent years. Both of these failure involved pipelines which had not been hydrostatically tested in accordance with current standards. One of the failures occurred after the long-standing operating pressure had been increased a relatively short period of time before the failure. This increase in pressure clearly decreased the margin of safety between the operating pressure and highest pressure ever experienced during the life of the pipeline and contributed to the acceleration of the growth of a defect to failure.

RSPA is planning to conduct research aimed at characterizing ERW defects and their growth rates for a variety of environmental conditions, in addition to the pipe having cathodic protection at less than standard pipe-to-soil potentials, coating disbondment, fatigue, and corrosion fatigue. If the research is successful, the resulting data could provide a basis for establishing criteria regarding when an ERW pipeline should be rehydrotested.

In view of the continuing ERW seam failures, OPS recommends that all pipeline operators having ERW pipelines installed prior to 1970:

(1) Consider hydrostatic testing on all hazardous liquid pipelines that have not been hydrostatically tested to 125% of the maximum allowable pressure, or alternatively reduce the operating pressure 20%;

(2) Avoid increasing a pipeline's long-standing operating pressure;

(3) Assure the effectiveness of the cathodic protection system. Consider the use of close interval pipe-to-soil surveys after evaluating the pipe coating and corrosion/cathodic protection history; and

(4) In the event of an ERW seam failure, conduct metallurgical examinations in order to determine the probable condition of the remainder of the ERW seams in the pipeline.